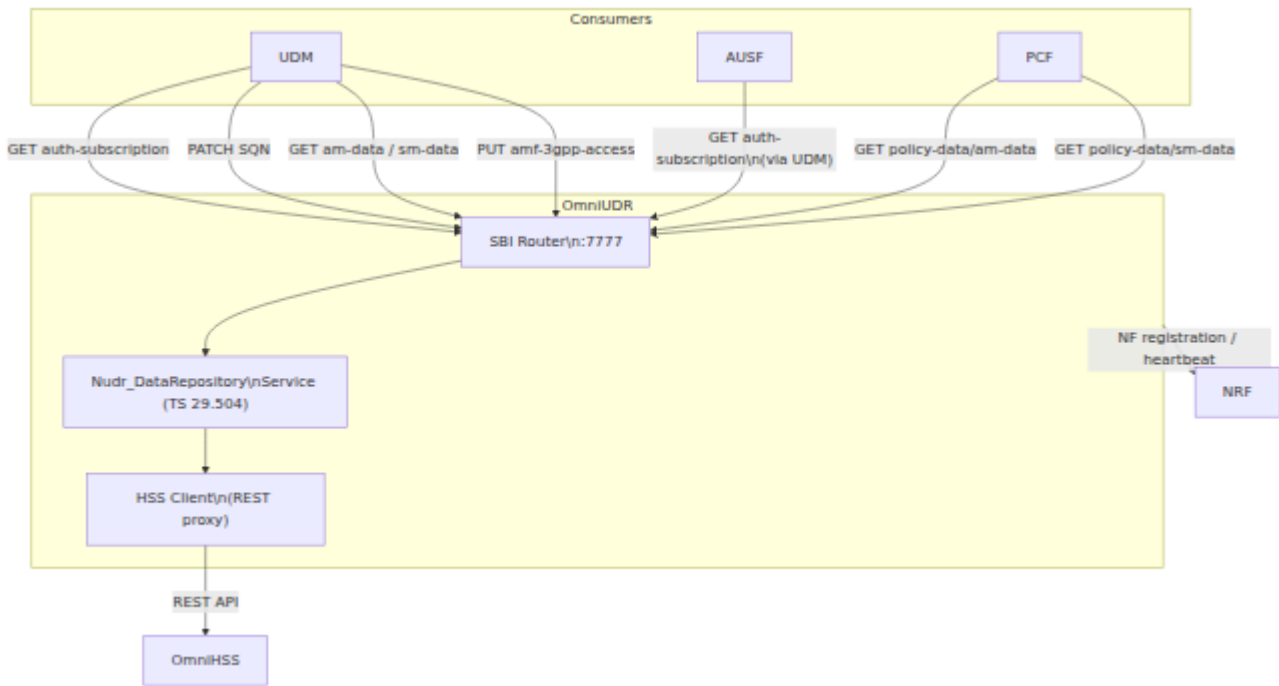


OmniUDR

1. Overview

OmniUDR is an Omnitech 5G Network Data Repository (UDR) implementation based on Nudr_DataRepository (TS 29.504) that serves as a central data repository for SBI, UDM, AUSF, and PCF. It provides a unified interface for these services to access and manage network data. OmniUDR is implemented as a REST API proxy, leveraging OmniHSS for data storage and management, and is compliant with 3GPP standards.

OmniUDR is implemented as an SBI (Service Based Interface) implementation (NF) and is registered with NRF (Network Repository Function) for service discovery.



2. 3GPP

UDR	TS 23.501 6.2.9
Nudr_DataRepository	TS 29.504
	TS 29.505
	TS 29.519
	TS 29.504 5.2.2
(AM, SM)	TS 29.504 5.2.3
(AMF/SMF)	TS 29.504 5.2.4
(AM/SM)	TS 29.504 5.2.5

3. SBI

HTTP/1.1 Content-Type: application/json

3GPP (TS 29.504)

Method	URI	Response	Status
GET	/nudr-dr/v2/subscription-data/{ueId}/authentication-data/authentication-subscription	Authentication Data (Ki, OPc, SQN)	200 OK
PATCH	/nudr-dr/v2/subscription-data/{ueId}/authentication-data/authentication-subscription	Update Authentication Data (SQN)	204 No Content
GET	/nudr-dr/v2/subscription-data/{ueId}/{servingPlmnId}/provisioned-data/am-data	AM Data	200 OK
GET	/nudr-dr/v2/subscription-data/{ueId}/{servingPlmnId}/provisioned-data/sm-data	SM Data	200 OK
GET	/nudr-dr/v2/subscription-data/{ueId}/{servingPlmnId}/provisioned-data/smf-select-data	SMF Select Data	200 OK

API (TS 29.504)

Method	URI	Response	Status
PUT	/nudr-dr/v2/subscription-data/{ueId}/context-data/amf-3gpp-access	AMF	204 No Content
PUT	/nudr-dr/v2/subscription-data/{ueId}/context-data/smf-registrations/{pduSessionId}	SMF	204 No Content

API (TS 29.519)

Method	URI	Response	Status
GET	/nudr-dr/v2/policy-data/ues/{ueId}/am-data	AM	200 OK
GET	/nudr-dr/v2/policy-data/ues/{ueId}/sm-data	SM	200 OK

4. API

OmniUDR is an Elixir application that runs on the `omniudr` port.

□□□□

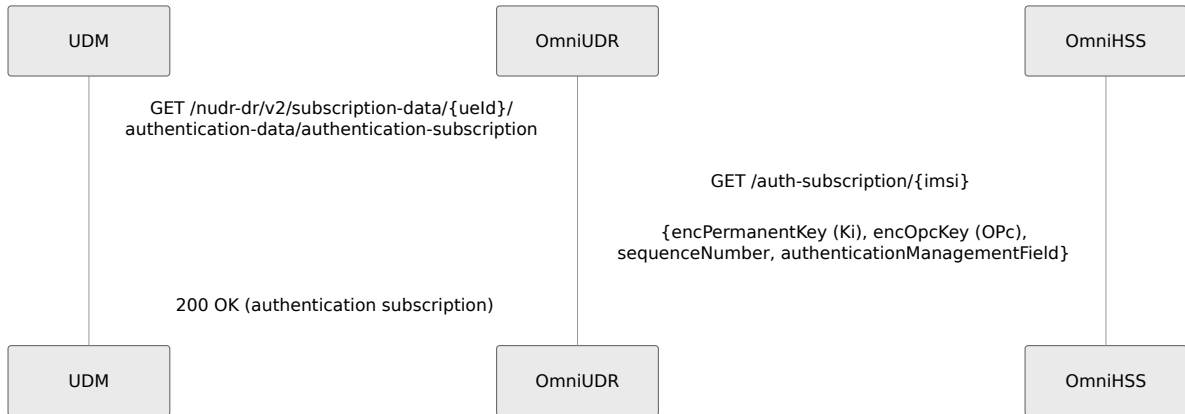
```
config :omniudr,  
  sbi_scheme: "http",  
  sbi_addr: "127.0.0.22",  
  sbi_port: 7777,  
  nrf_uri: "http://127.0.0.10:7777",  
  mcc: "999",  
  mnc: "70",  
  heartbeat_interval: 10_000,  
  hss_api_base_url: "https://127.0.0.1:8443"
```

□□□

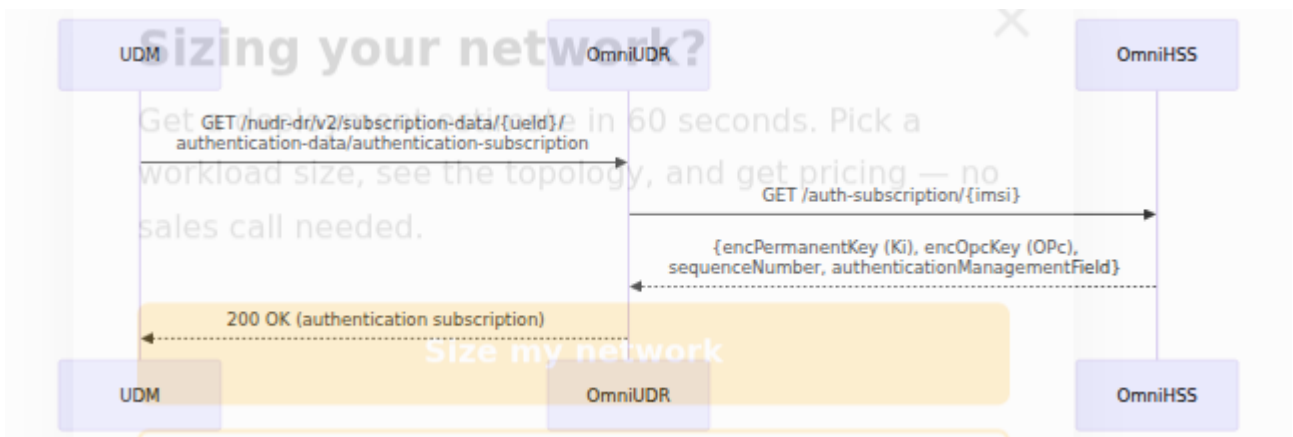
□□	□□	□□□	□□
sbi_scheme	□□ □	"http"	SBI HTTP □□□□ URI □□
sbi_addr	□□ □	"127.0.0.22"	SBI HTTP □□□□□ □ IP □□
sbi_port	□□	7777	SBI HTTP □□□□□ □ TCP □□
nrf_uri	□□ □	"http://127.0.0.10:7777"	□□ NF □□□□□□ NRF □□ URI
mcc	□□ □	"999"	□□ PLMN □□□□□ □□
mnc	□□ □	"70"	□□ PLMN □□□□□ □□
heartbeat_interval	□□ (□ □)	10000	OmniUDR □□ NRF □□ PATCH □□□□□
hss_api_base_url	□□ □	"https://127.0.0.1:8443"	OmniHSS REST API □□□ URL□□□□ □□□□□□□□□□□□

5. □□□□

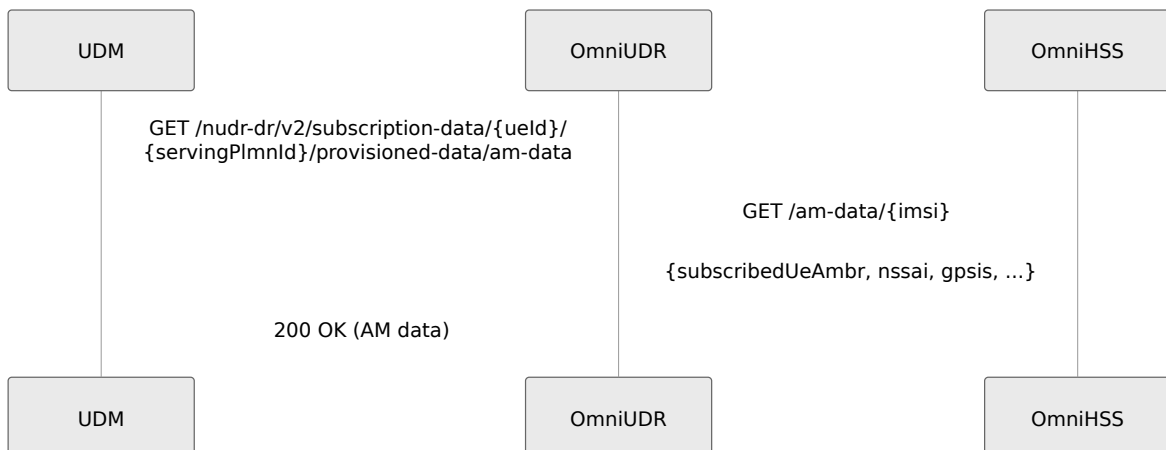
5.1 □□□□□□



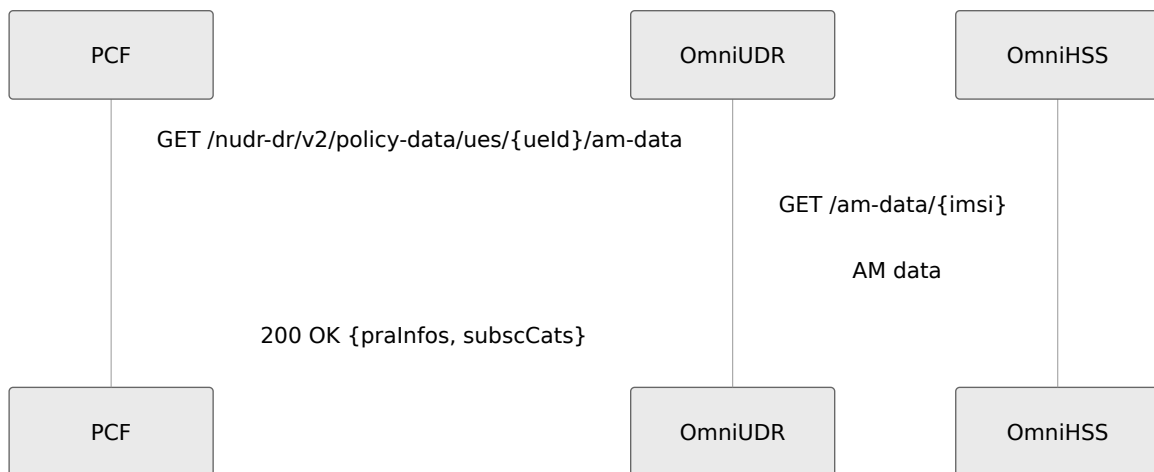
5.2 SQN □□



5.3 □□□□□□□□



5.4 序列图



6. Prometheus ☐☐

UDR ☐☐

☐☐	☐☐	☐☐	☐☐
<code>omni_udr.nrf.registration.status</code>	gauge	<code>nf_type</code>	NRF ☐☐☐ ☐ (1=☐☐☐ ☐, 0=☐☐☐ ☐)
<code>omni_udr.hss.health</code>	gauge	--	HSS ☐☐☐ ☐☐☐ (1=☐☐☐ ☐☐, 0=☐☐☐ ☐)
<code>omni_udr.hss_requests.total</code>	counter	<code>endpoint,</code> <code>result</code>	☐ HSS ☐ ☐☐☐☐☐
<code>omni_udr.hss_request.duration_ms</code>	distribution	<code>endpoint</code>	HSS ☐☐☐ ☐☐☐☐☐☐☐☐ ☐☐☐☐☐☐☐ 5, 10, 25, 50, 100, 250, 500, 1000, 2500☐

BEAM VM

Key	Type	Description
<code>beam.memory.total</code>	gauge	BEAM memory usage
<code>beam.memory.processes</code>	gauge	Erlang processes memory usage
<code>beam.memory.system</code>	gauge	System memory usage (ETS, atoms, code)
<code>beam.processes.count</code>	gauge	Erlang process count
<code>beam.vm.uptime</code>	gauge	VM uptime

7. UDRs

ID	Category	Description
UDR-1	Core	OmniHSS core UDR for AM and SM data storage and HSS interaction
UDR-2	Core	Core UDR for AM/SM data storage and HSS interaction, including paths like <code>/policy-data/ues/{ueId}/am-data</code> and <code>.../sm-data</code> , and reference to TS 29.519
UDR-3	Core	Core UDR for Nudr_DataRepository_Subscribe service
UDR-4	SMF	SMF UDR for <code>put_smf_registration</code> service and OmniHSS interaction
UDR-5	Core	OmniUDR core UDR for OmniHSS interaction

8. 测试

GET 返回 404 错误

OmniUDR 调用 OmniHSS 失败

1. `hss_api_base_url` 为 OmniUDR 配置
2. 调用 IMSI 为 OmniHSS 配置
3. 调用参数 `ueId` 为 `imsi- $\{digits\}$` 格式

PATCH SQN 返回 500

HSS 调用 SQN 失败 OmniHSS 返回 UDR 错误 `Failed to update SQN for {ueId}: {reason}` 返回 `:ok` 成功

测试失败

`/policy-data/` 调用 HSS AM/SM 失败

HSS 测试

调用 `omni_udr.hss.health` gauge (1=成功, 0=失败)

`omni_udr.hss_request.duration_ms` 调用 HSS 耗时